

105TH CONGRESS  
1ST SESSION

# S. 910

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## AN ACT

To authorize appropriations for carrying out the Earthquake Hazards Reduction Act of 1977 for fiscal years 1998 and 1999, and for other purposes.

1       *Be it enacted by the Senate and House of Representa-*  
2   *tives of the United States of America in Congress assembled,*

1 **SECTION 1. AUTHORIZATION OF APPROPRIATIONS.**

2 Section 12 of the Earthquake Hazards Reduction Act  
3 of 1977 (42 U.S.C. 7706) is amended—

4 (1) in subsection (a)(7)—

5 (A) by striking “and” after “1995,”; and

6 (B) by inserting before the period at the  
7 end the following: “, \$20,900,000 for the fiscal  
8 year ending September 30, 1998, and  
9 \$21,500,000 for the fiscal year ending Septem-  
10 ber 30, 1999”;

11 (2) in subsection (b)—

12 (A) by striking “and” after “September  
13 30, 1995,”;

14 (B) by inserting before the period at the  
15 end the following: “; \$52,565,000 for the fiscal  
16 year ending September 30, 1998, of which  
17 \$3,800,000 shall be used for the Global Seismic  
18 Network operated by the Agency; and  
19 \$54,052,000 for the fiscal year ending Septem-  
20 ber 30, 1999, of which \$3,800,000 shall be  
21 used for the Global Seismic Network operated  
22 by the Agency”; and

23 (C) by adding at the end the following: “Of  
24 the amounts authorized to be appropriated  
25 under this subsection, at least—

1           “(1) \$8,000,000 of the amount authorized to be  
2       appropriated for the fiscal year ending September  
3       30, 1998; and

4           “(2) \$8,250,000 of the amount authorized for  
5       the fiscal year ending September 30, 1999,  
6       shall be used for carrying out a competitive, peer-reviewed  
7       program under which the Director, in close coordination  
8       with and as a complement to related activities of the Unit-  
9       ed States Geological Survey, awards grants to, or enters  
10      into cooperative agreements with, State and local govern-  
11      ments and persons or entities from the academic commu-  
12      nity and the private sector.”;

13           (3) in subsection (c)—

14           (A) by striking “and” after “September  
15       30, 1995,”; and

16           (B) by inserting before the period at the  
17       end the following: “, (3) \$18,450,000 for engi-  
18       neering research and \$11,920,000 for geo-  
19       sciences research for the fiscal year ending Sep-  
20       tember 30, 1998, and (4) \$19,000,000 for engi-  
21       neering research and \$12,280,000 for geo-  
22       sciences research for the fiscal year ending Sep-  
23       tember 30, 1999”; and

24           (4) in the last sentence of subsection (d)—

1 (A) by striking “and” after “September  
2 30, 1995,”; and

3 (B) by inserting before the period at the  
4 end the following: “, \$2,000,000 for the fiscal  
5 year ending September 30, 1998, and  
6 \$2,060,000 for the fiscal year ending Septem-  
7 ber 30, 1999”.

8 **SEC. 2. AUTHORIZATION OF REAL-TIME SEISMIC HAZARD**  
9 **WARNING SYSTEM DEVELOPMENT, AND**  
10 **OTHER ACTIVITIES.**

11 (a) AUTOMATIC SEISMIC WARNING SYSTEM DEVEL-  
12 OPMENT.—

13 (1) DEFINITIONS.—In this section:

14 (A) DIRECTOR.—The term “Director”  
15 means the Director of the United States Geo-  
16 logical Survey.

17 (B) HIGH-RISK ACTIVITY.—The term  
18 “high-risk activity” means an activity that may  
19 be adversely affected by a moderate to severe  
20 seismic event (as determined by the Director).  
21 The term includes high-speed rail  
22 transportation.

23 (C) REAL-TIME SEISMIC WARNING SYS-  
24 TEM.—The term “real-time seismic warning  
25 system” means a system that issues warnings

1 in real-time from a network of seismic sensors  
2 to a set of analysis processors, directly to re-  
3 ceivers related to high-risk activities.

4 (2) IN GENERAL.—The Director shall conduct a  
5 program to develop a prototype real-time seismic  
6 warning system. The Director may enter into such  
7 agreements or contracts as may be necessary to  
8 carry out the program.

9 (3) UPGRADE OF SEISMIC SENSORS.—In carry-  
10 ing out a program under paragraph (2), in order to  
11 increase the accuracy and speed of seismic event  
12 analysis to provide for timely warning signals, the  
13 Director shall provide for the upgrading of the net-  
14 work of seismic sensors participating in the proto-  
15 type to increase the capability of the sensors—

16 (A) to measure accurately large magnitude  
17 seismic events (as determined by the Director);  
18 and

19 (B) to acquire additional parametric data.

20 (4) DEVELOPMENT OF COMMUNICATIONS AND  
21 COMPUTATION INFRASTRUCTURE.—In carrying out a  
22 program under paragraph (2), the Director shall de-  
23 velop a communications and computation infrastruc-  
24 ture that is necessary—

1 (A) to process the data obtained from the  
2 upgraded seismic sensor network referred to in  
3 paragraph (3); and

4 (B) to provide for, and carry out, such  
5 communications engineering and development  
6 as is necessary to facilitate—

7 (i) the timely flow of data within a  
8 real-time seismic hazard warning system;  
9 and

10 (ii) the issuance of warnings to receiv-  
11 ers related to high-risk activities.

12 (5) PROCUREMENT OF COMPUTER HARDWARE  
13 AND COMPUTER SOFTWARE.—In carrying out a pro-  
14 gram under paragraph (2), the Director shall pro-  
15 cure such computer hardware and computer soft-  
16 ware as may be necessary to carry out the program.

17 (6) REPORTS ON PROGRESS.—

18 (A) IN GENERAL.—Not later than 120  
19 days after the date of enactment of this Act,  
20 the Director shall prepare and submit to Con-  
21 gress a report that contains a plan for imple-  
22 menting a real-time seismic hazard warning  
23 system.

24 (B) ADDITIONAL REPORTS.—Not later  
25 than 1 year after the date on which the Direc-

1           tor submits the report under subparagraph (A),  
 2           and annually thereafter, the Director shall pre-  
 3           pare and submit to Congress a report that sum-  
 4           marizes the progress of the Director in imple-  
 5           menting the plan referred to in subparagraph  
 6           (A).

7           (7) AUTHORIZATION OF APPROPRIATIONS.—In  
 8           addition to the amounts made available to the Direc-  
 9           tor under section 12(b) of the Earthquake Hazards  
 10          Reduction Act of 1977 (42 U.S.C. 7706(b)), there  
 11          are authorized to be appropriated to the Department  
 12          of the Interior, to be used by the Director to carry  
 13          out paragraph (2), \$3,000,000 for each of fiscal  
 14          years 1998 and 1999.

15          (b) SEISMIC MONITORING NETWORKS ASSESS-  
 16          MENT.—

17           (1) IN GENERAL.—The Director shall provide  
 18          for an assessment of regional seismic monitoring  
 19          networks in the United States. The assessment shall  
 20          address—

21           (A) the need to update the infrastructure  
 22          used for collecting seismological data for re-  
 23          search and monitoring of seismic events in the  
 24          United States;

1 (B) the need for expanding the capability  
 2 to record strong ground motions, especially for  
 3 urban area engineering purposes;

4 (C) the need to measure accurately large  
 5 magnitude seismic events (as determined by the  
 6 Director);

7 (D) the need to acquire additional para-  
 8 metric data; and

9 (E) projected costs for meeting the needs  
 10 described in subparagraphs (A) through (D).

11 (2) RESULTS.—The Director shall transmit the  
 12 results of the assessment conducted under this sub-  
 13 section to Congress not later than 1 year after the  
 14 date of enactment of this Act.

15 (c) EARTH SCIENCE TEACHING MATERIALS.—

16 (1) DEFINITIONS.—In this subsection:

17 (A) LOCAL EDUCATIONAL AGENCY.—The  
 18 term “local educational agency” has the mean-  
 19 ing given that term in section 14101 of the Ele-  
 20 mentary and Secondary Education Act of 1965  
 21 (20 U.S.C. 8801).

22 (B) SCHOOL.—The term “school” means a  
 23 nonprofit institutional day or residential school  
 24 that provides education for any of the grades  
 25 kindergarten through grade 12.



1           (2) TEACHING MATERIALS.—In a manner con-  
2           sistent with the requirement under section 5(b)(4) of  
3           the Earthquake Hazards Reduction Act of 1977 (42  
4           U.S.C. 7704(b)(4)) and subject to a merit based  
5           competitive process, the Director of the National  
6           Science Foundation may use funds made available to  
7           him or her under section 12(c) of such Act (42  
8           U.S.C. 7706(c)) to develop, and make available to  
9           schools and local educational agencies for use by  
10          schools, at a minimal cost, earth science teaching  
11          materials that are designed to meet the needs of ele-  
12          mentary and secondary school teachers and stu-  
13          dents.

14          (d) IMPROVED SEISMIC HAZARD ASSESSMENT.—

15               (1) IN GENERAL.—As soon as practicable after  
16               the date of enactment of this Act, the Director shall  
17               conduct a project to improve the seismic hazard as-  
18               sessment of seismic zones.

19               (2) REPORTS.—

20                     (A) IN GENERAL.—Not later than 1 year  
21                     after the date of enactment of this Act, and an-  
22                     nually during the period of the project, the Di-  
23                     rector shall prepare, and submit to Congress, a  
24                     report on the findings of the project.

1 (B) FINAL REPORT.—Not later than 60  
2 days after the date of termination of the project  
3 conducted under this subsection, the Director  
4 shall prepare and submit to Congress a report  
5 concerning the findings of the project.

6 (e) STUDY OF NATIONAL EARTHQUAKE EMERGENCY  
7 TRAINING CAPABILITIES.—

8 (1) IN GENERAL.—The Director of the Federal  
9 Emergency Management Agency shall conduct an  
10 assessment of the need for additional Federal disas-  
11 ter-response training capabilities that are applicable  
12 to earthquake response.

13 (2) CONTENTS OF ASSESSMENT.—The assess-  
14 ment conducted under this subsection shall in-  
15 clude—

16 (A) a review of the disaster training pro-  
17 grams offered by the Federal Emergency Man-  
18 agement Agency at the time of the assessment;

19 (B) an estimate of the number and types  
20 of emergency response personnel that have, dur-  
21 ing the period beginning on January 1, 1990  
22 and ending on July 1, 1997, sought the train-  
23 ing referred to in subparagraph (A), but have  
24 been unable to receive that training as a result  
25 of the oversubscription of the training capabili-

1           ties of the Federal Emergency Management  
2           Agency; and

3                   (C) a recommendation on the need to pro-  
4           vide additional Federal disaster-response train-  
5           ing centers.

6           (3) REPORT.—Not later than 180 days after  
7           the date of enactment of this Act, the Director shall  
8           prepare and submit to Congress a report that ad-  
9           dresses the results of the assessment conducted  
10          under this subsection.

11 **SEC. 3. COMPREHENSIVE ENGINEERING RESEARCH PLAN.**

12          (a) NATIONAL SCIENCE FOUNDATION.—Section  
13          5(b)(4) of the Earthquake Hazards Reduction Act of 1977  
14          (42 U.S.C. 7704(b)(4)) is amended—

15               (1) by striking “and” at the end of subpara-  
16          graph (D);

17               (2) by striking the period at the end of sub-  
18          paragraph (E) and inserting “; and”; and

19               (3) by adding at the end the following:

20                       “(F) develop, in conjunction with the Fed-  
21                       eral Emergency Management Agency, the Na-  
22                       tional Institute of Standards and Technology,  
23                       and the United States Geological Survey, a  
24                       comprehensive plan for earthquake engineering  
25                       research to effectively use existing testing facili-

1           ties and laboratories (in existence at the time of  
2           the development of the plan), upgrade facilities  
3           and equipment as needed, and integrate new,  
4           innovative testing approaches to the research  
5           infrastructure in a systematic manner.”.

6           (b) FEDERAL EMERGENCY MANAGEMENT AGEN-  
7   CY.—Section 5(b)(1) of the Earthquake Hazards Reduc-  
8   tion Act of 1977 (42 U.S.C. 7704(b)(1)) is amended—

9           (1) by striking “and” at the end of subpara-  
10          graph (D);

11          (2) by striking the period at the end of sub-  
12          paragraph (E) and inserting “; and”; and

13          (3) by adding at the end the following:

14                 “(F) work with the National Science Foun-  
15                 dation, the National Institute of Standards and  
16                 Technology, and the United States Geological  
17                 Survey, to develop a comprehensive plan for  
18                 earthquake engineering research to effectively  
19                 use existing testing facilities and laboratories  
20                 (existing at the time of the development of the  
21                 plan), upgrade facilities and equipment as need-  
22                 ed, and integrate new, innovative testing ap-  
23                 proaches to the research infrastructure in a sys-  
24                 tematic manner.”.

1 (c) UNITED STATES GEOLOGICAL SURVEY.—Section  
2 5(b)(3) of the Earthquake Hazards Reduction Act of 1977  
3 (42 U.S.C. 7704(b)(3)) is amended—

4 (1) by striking “and” at the end of subpara-  
5 graph (E);

6 (2) by striking the period at the end of sub-  
7 paragraph (G) and inserting “; and”; and

8 (3) by adding at the end the following:

9 “(H) work with the National Science  
10 Foundation, the Federal Emergency Manage-  
11 ment Agency, and the National Institute of  
12 Standards and Technology to develop a com-  
13 prehensive plan for earthquake engineering re-  
14 search to effectively use existing testing facili-  
15 ties and laboratories (in existence at the time of  
16 the development of the plan), upgrade facilities  
17 and equipment as needed, and integrate new,  
18 innovative testing approaches to the research  
19 infrastructure in a systematic manner.”.

20 (d) NATIONAL INSTITUTE OF STANDARDS AND  
21 TECHNOLOGY.—Section 5(b)(5) of the Earthquake Haz-  
22 ards Reduction Act of 1977 (42 U.S.C. 7704(b)(5)) is  
23 amended—

24 (1) by striking “and” at the end of subpara-  
25 graph (B);

1           (2) by striking the period at the end of sub-  
2 paragraph (C) and inserting “; and”; and

3           (3) by adding at the end the following:

4                   “(D) work with the National Science  
5 Foundation, the Federal Emergency Manage-  
6 ment Agency, and the United States Geological  
7 Survey to develop a comprehensive plan for  
8 earthquake engineering research to effectively  
9 use existing testing facilities and laboratories  
10 (in existence at the time of the development of  
11 the plan), upgrade facilities and equipment as  
12 needed, and integrate new, innovative testing  
13 approaches to the research infrastructure in a  
14 systematic manner.”.

15 **SEC. 4. REPEALS.**

16       Sections 6 and 7 of the Earthquake Hazards Reduc-  
17 tion Act of 1977 (42 U.S.C. 7705 and 7705a) are re-  
18 pealed.

Passed the Senate July 31, 1997.

Attest:

*Secretary.*

105TH CONGRESS  
1ST SESSION

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## AN ACT

To authorize appropriations for carrying out the Earthquake Hazards Reduction Act of 1977 for fiscal years 1998 and 1999, and for other purposes.

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